

Flood Insurance

Managing
Floodplain
Development

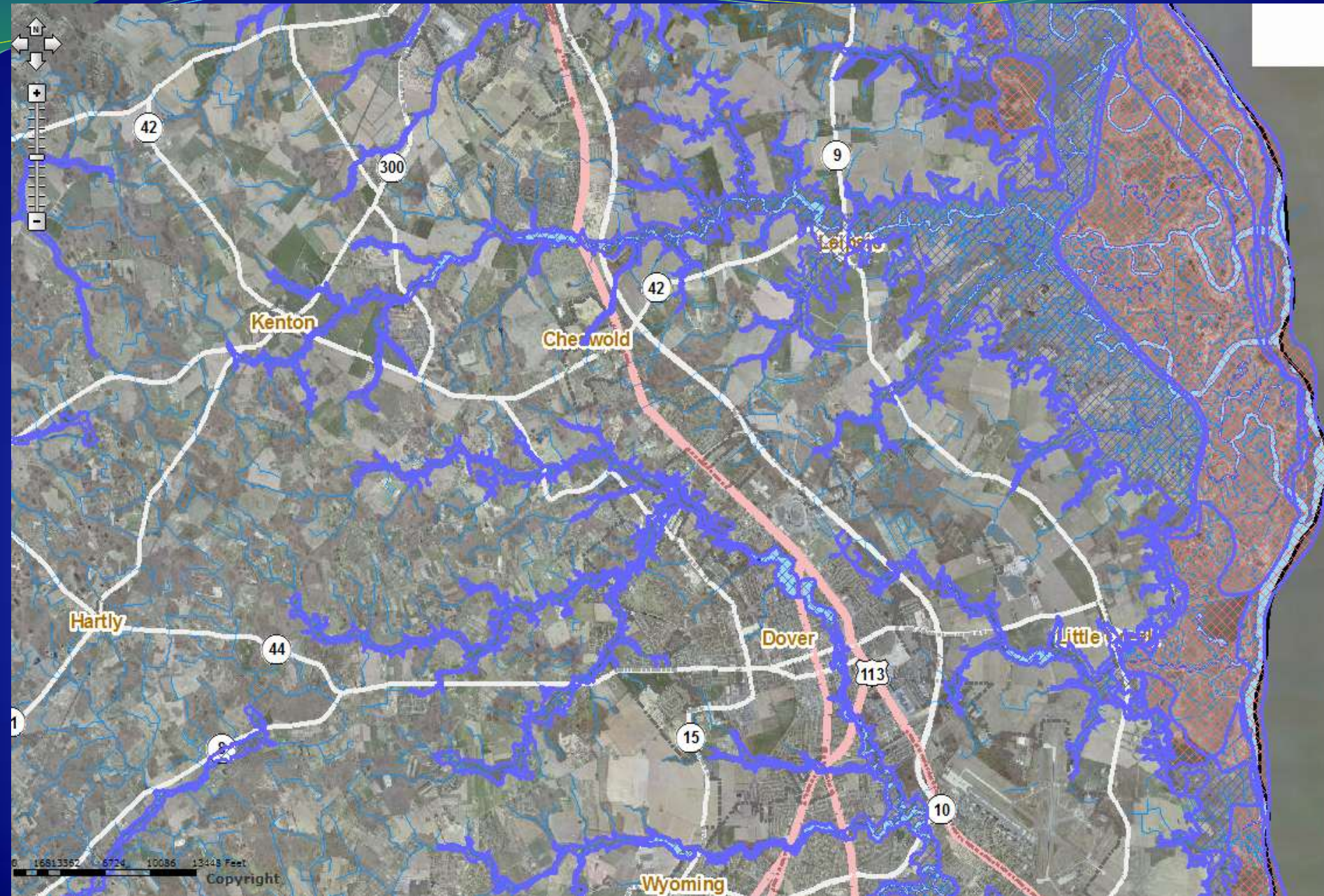
Mapping
Flood
Risk

Mitigating Flood Risk

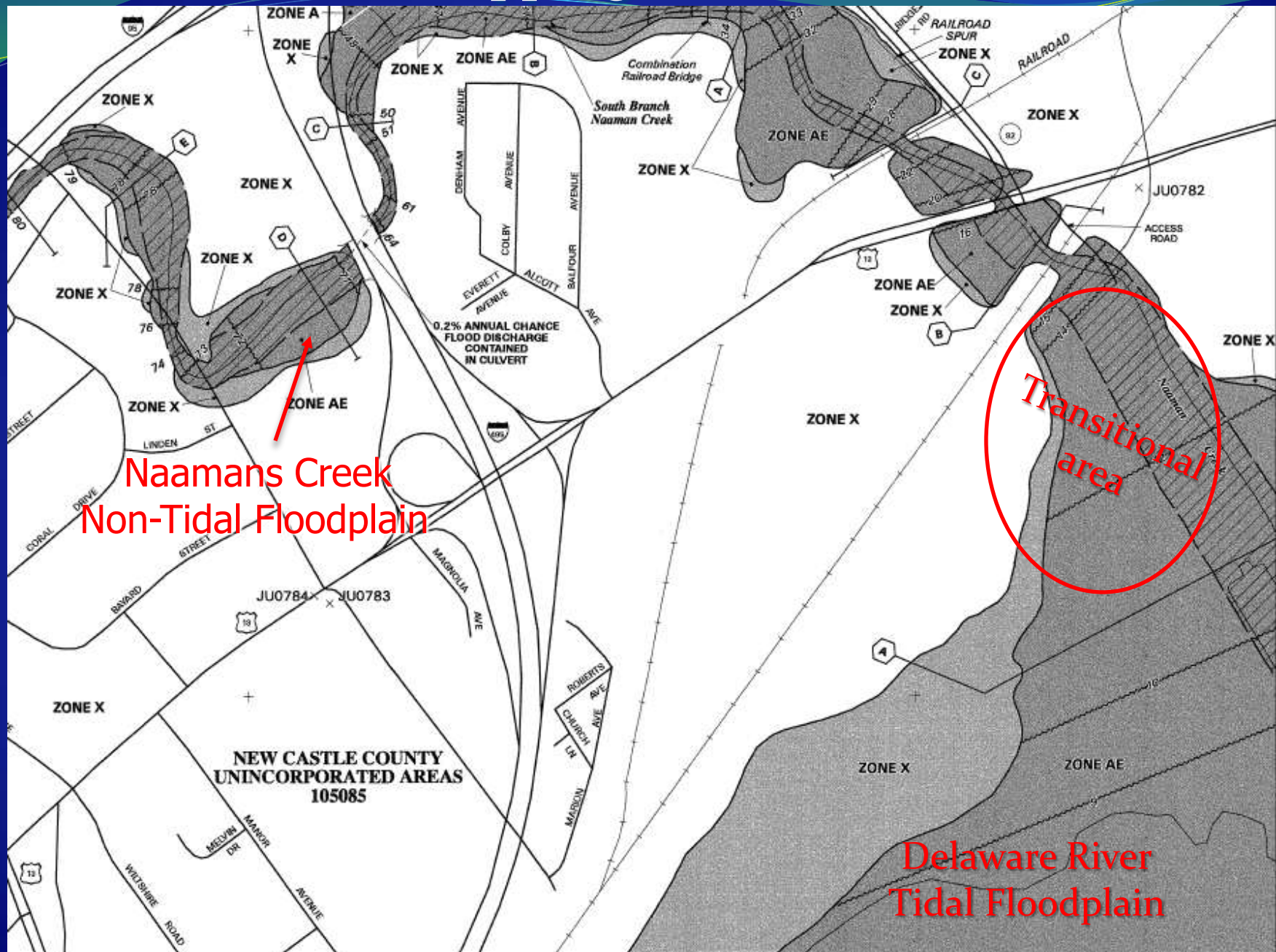
Michael Powell



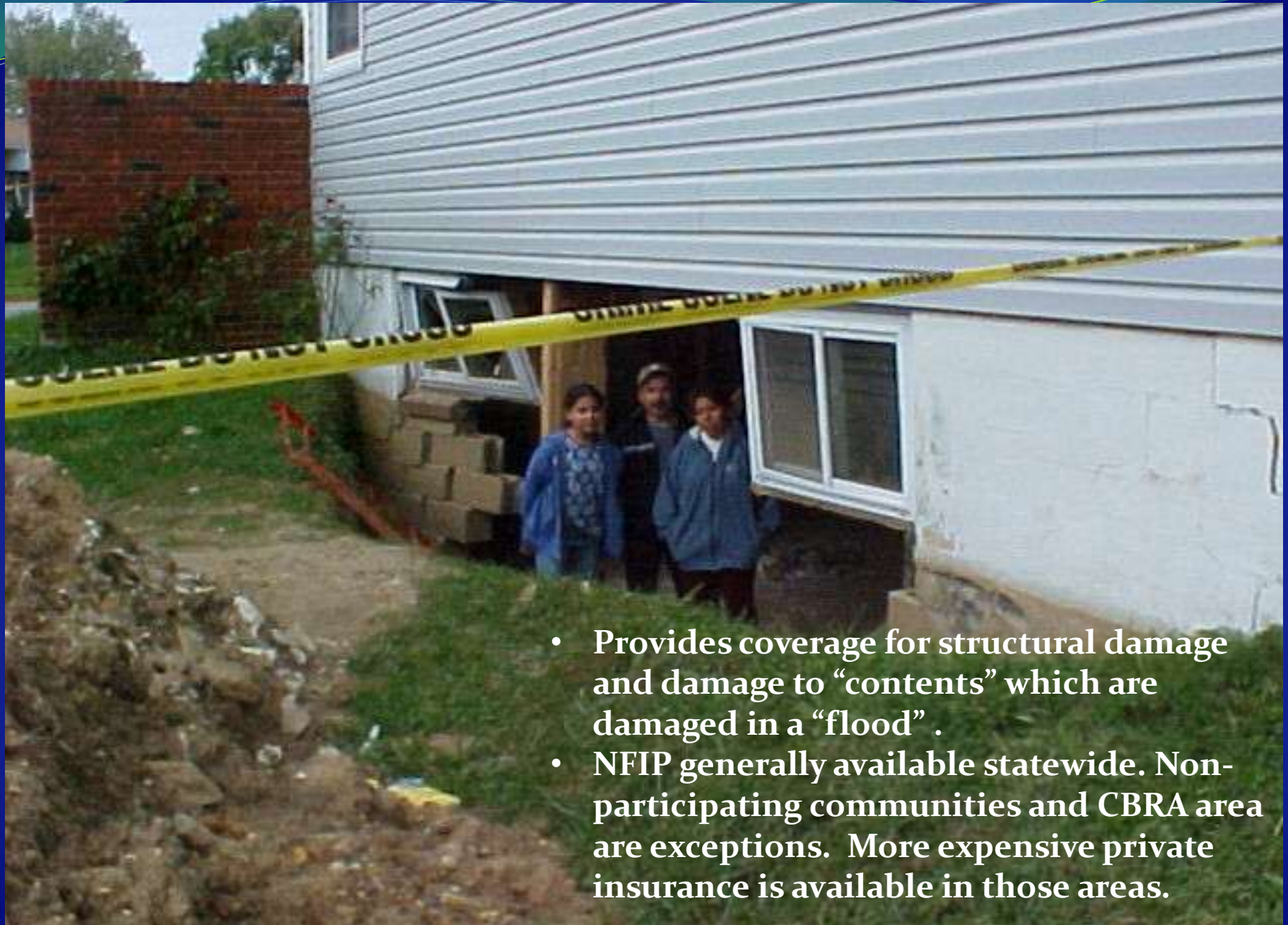
Mapping Flood Risk



Mapping Flood Risk



Flood Insurance



- Provides coverage for structural damage and damage to “contents” which are damaged in a “flood” .
- NFIP generally available statewide. Non-participating communities and CBRA area are exceptions. More expensive private insurance is available in those areas.

Mitigating Flood Risk

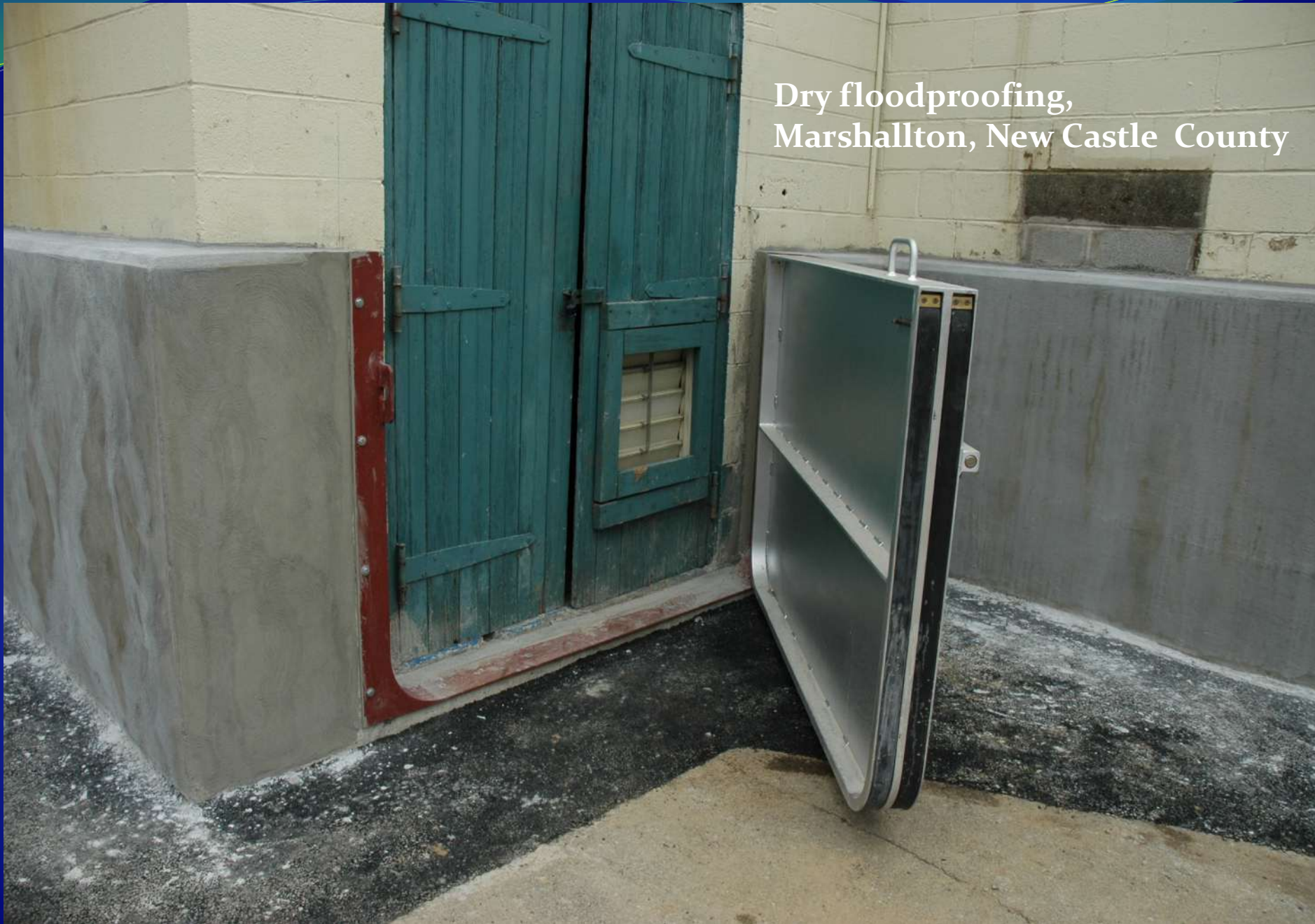


Elevation and Relocation – Big Stone Beach, Kent County



Mitigating Flood Risk

Dry floodproofing,
Marshallton, New Castle County



Mitigating Flood Risk



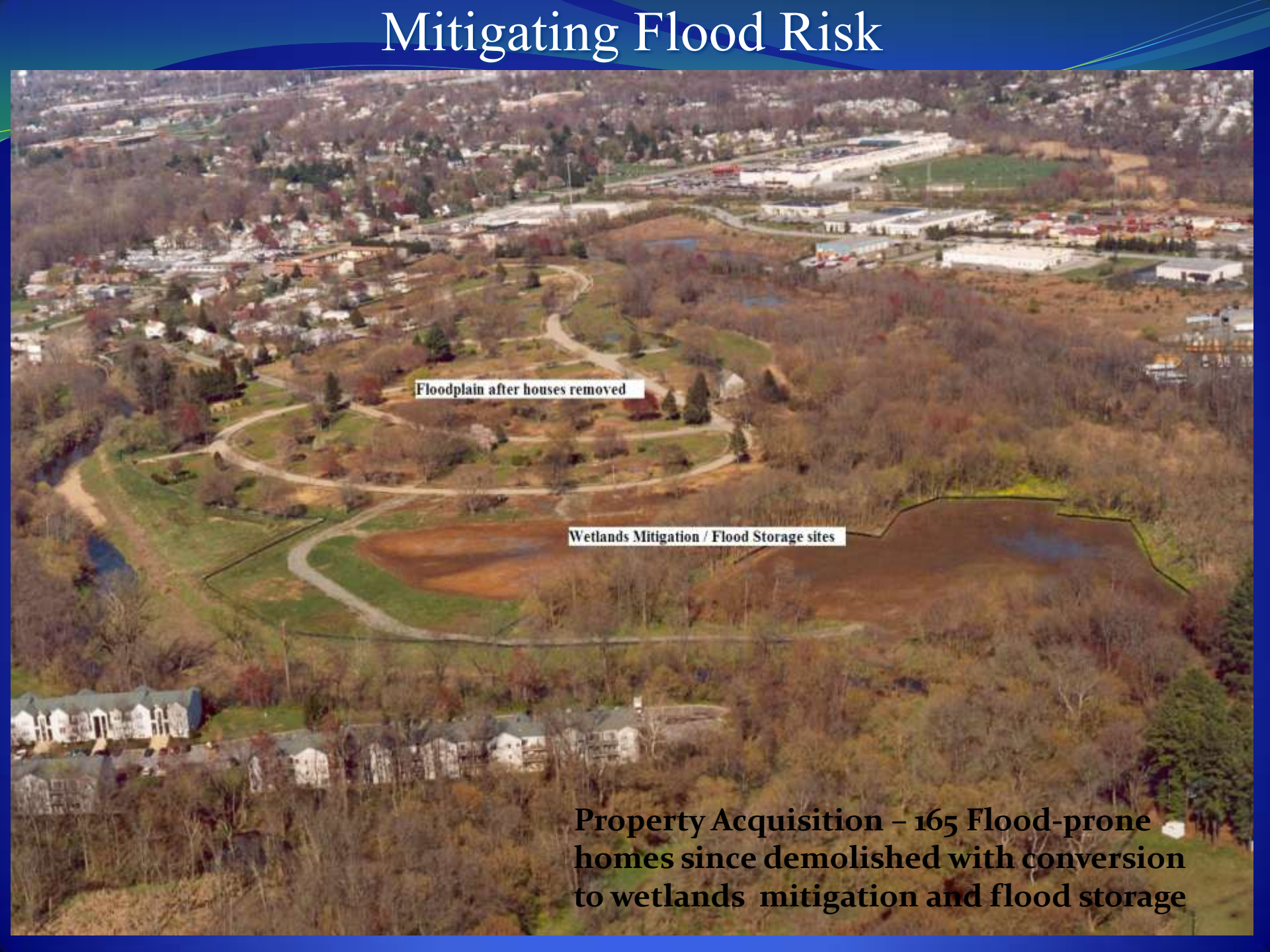
Property Acquisition

Bowers Beach:

Flooded home purchased
and demolished for
conversion to community
park



Mitigating Flood Risk

An aerial photograph showing a large area of land that has been converted from residential use to wetlands for flood mitigation. The area is characterized by brown, muddy soil and patches of green vegetation. A winding road or path runs through the center of the area. In the background, there are residential houses and some commercial buildings. The foreground shows a row of houses and a fence line.

Floodplain after houses removed

Wetlands Mitigation / Flood Storage sites

Property Acquisition – 165 Flood-prone homes since demolished with conversion to wetlands mitigation and flood storage

Managing Floodplain Development



Base Flood Elevation

Minimum NFIP regulations allow developing in floodplains with floor elevation requirements. Many communities in Delaware have more restrictive floodplain regulations.

Residual risk

- 100-year flood is a relatively low standard
- Margin of error in mapping – can be significant
- Sea level rise – not accounted for
- Watershed changes – not accounted for
- Storms which exceed 100-year return frequency
- Non-compliance

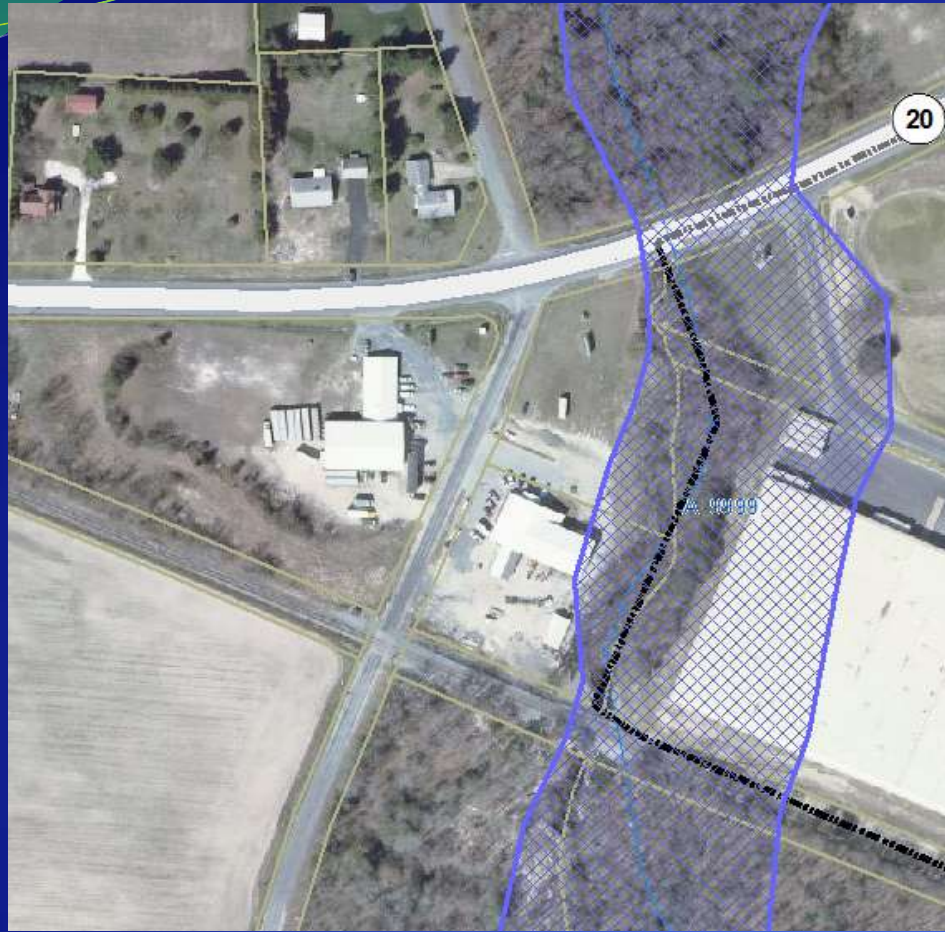
Significant floodplain construction is still occurring



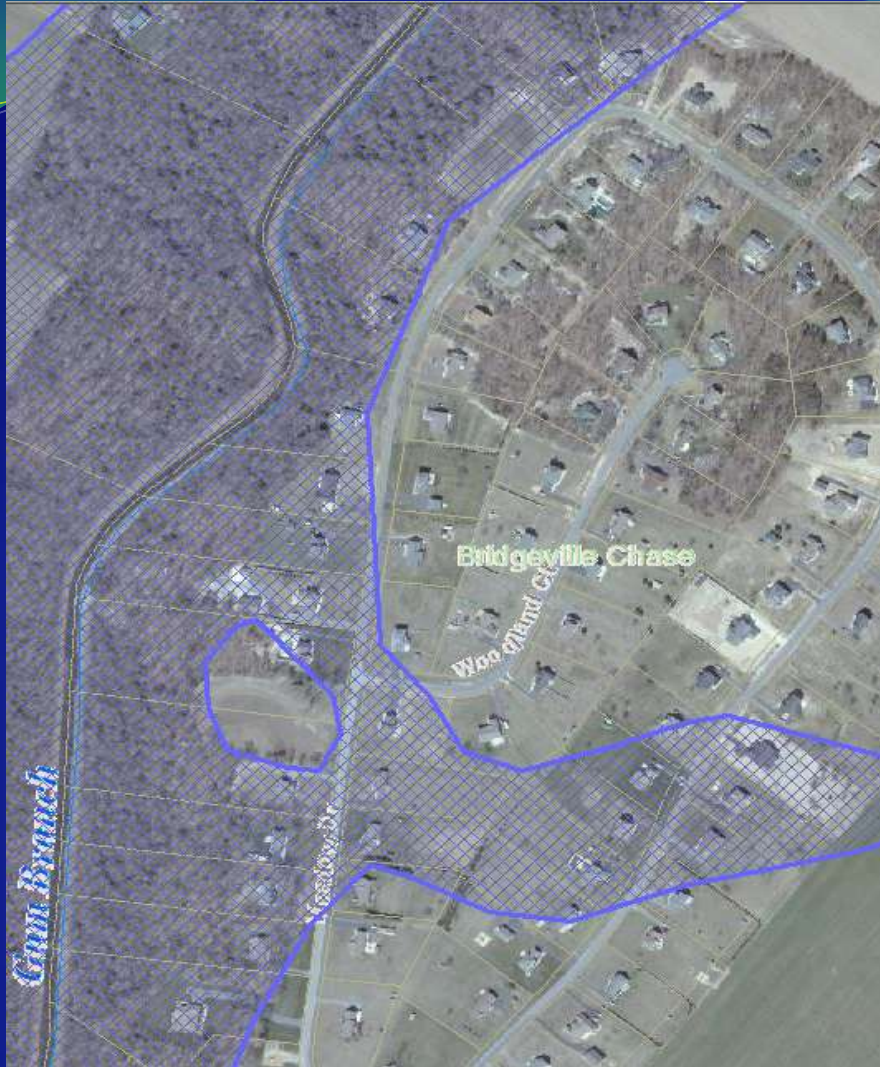
Margin of error in mapping – can be significant

12-30-2010 preliminary map

1-6-2005 effective map



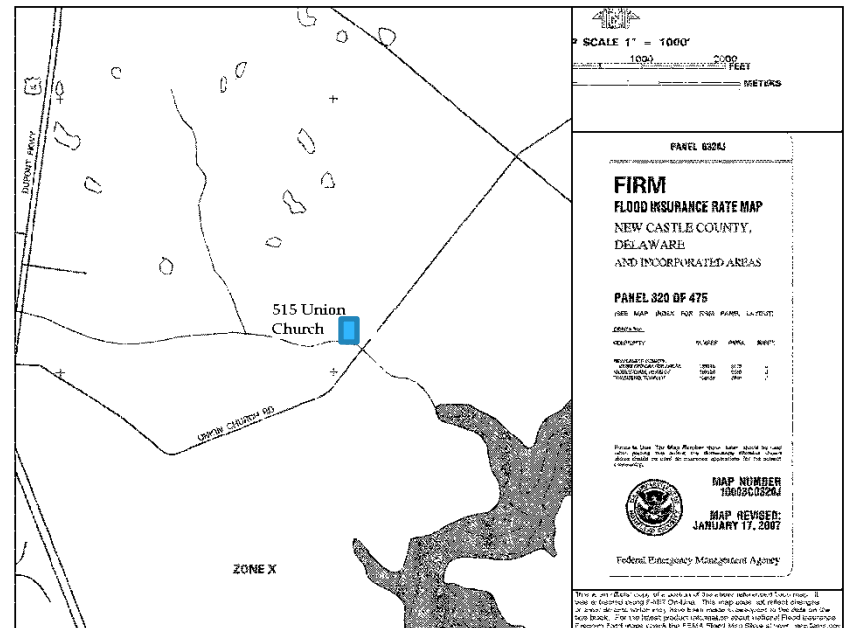
Margin of error in mapping – can be significant



1-6-2005 effective map

12-30-2010 preliminary map





Flooding to house on a stream which has not been mapped by FEMA. This house is not be repairable due to extensive damage during Hurricane Irene.

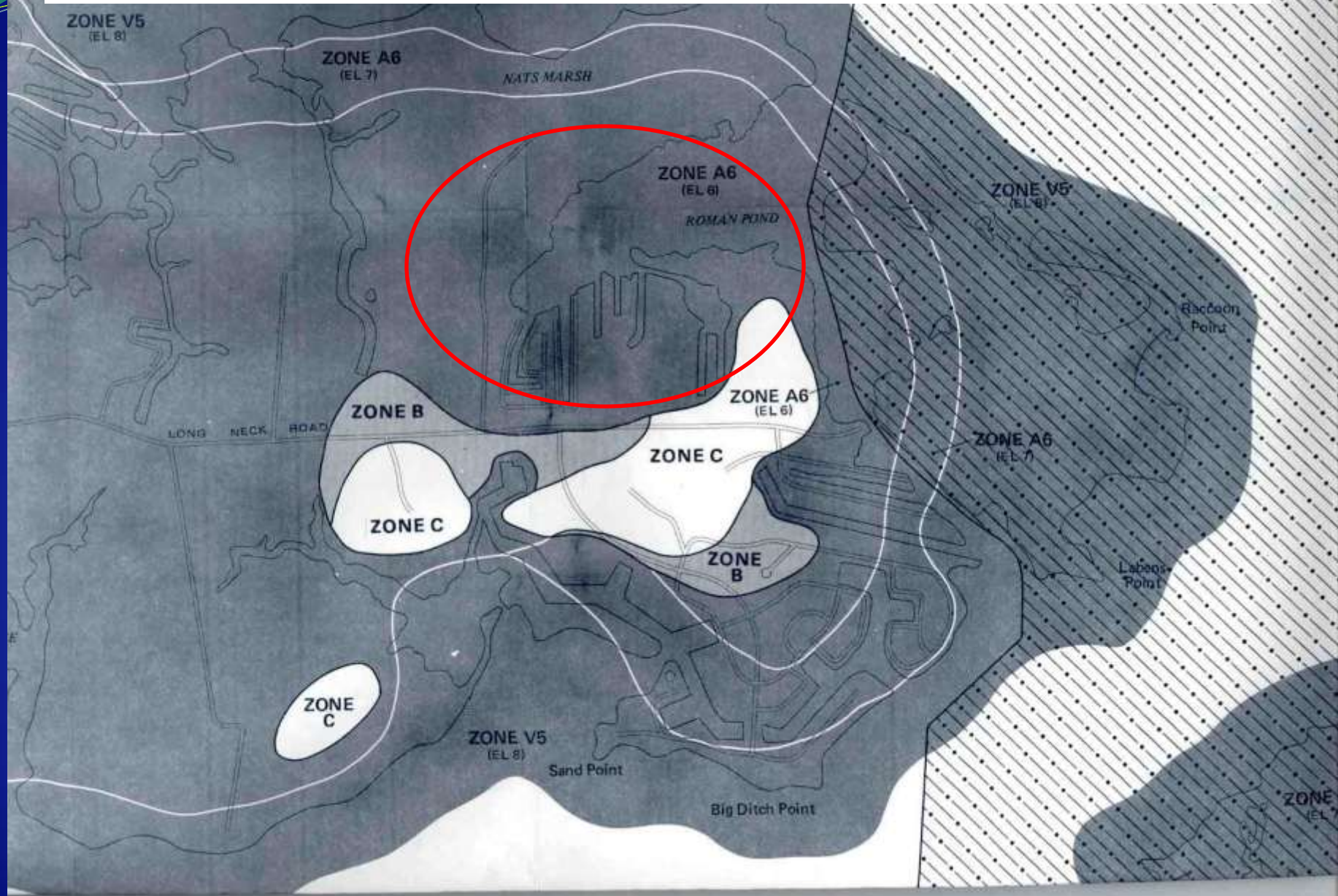


100-year flood elevation is a relatively low standard - Depth-damage function for a medical services building in Stanton, DE built in 1991 with first floor near the 100-year flood elevation.

CONTENTS DEPTH-DAMAGE FUNCTION (DDF)

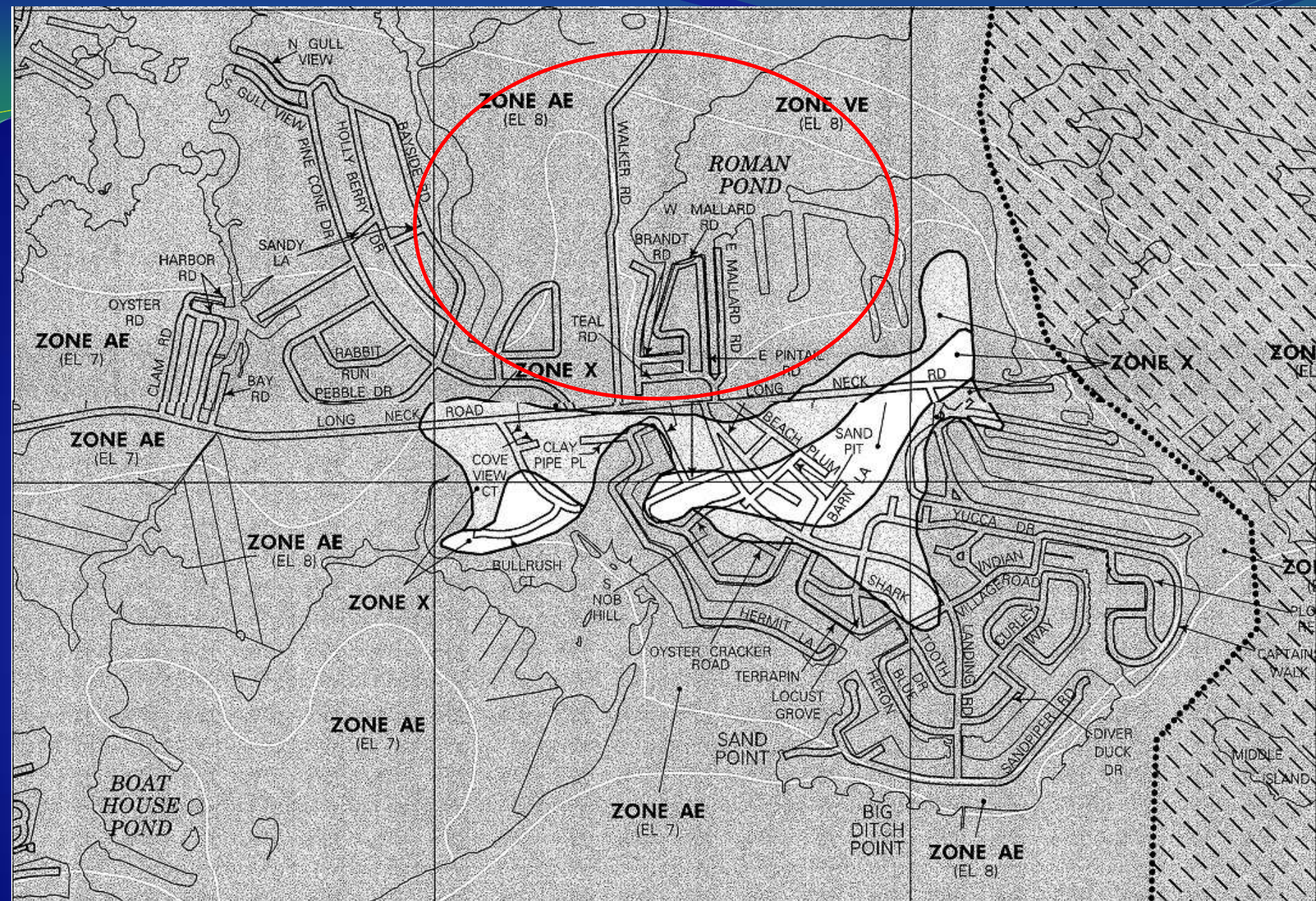
Flood Depth (feet)	Building DDF(%)	ESTIMATED CONTENTS DAMAGE - BEFORE		
		Default DDF (%)	User-Entered DDF (%)	Contents DDF (\$)
-2	0	0.0		\$0
-1	0	0.0		\$0
0	5	7.5		\$37,500
1	9	13.5		\$67,500
2	13	19.5		\$97,500
3	18	27.0		\$135,000
4	20	30.0		\$150,000
5	22	33.0		\$165,000
6	24	36.0		\$180,000
7	26	39.0		\$195,000
8	29	43.5		\$217,500
>8	33	49.5		\$247,500

Base Flood Elevations from 1985 and 1992 Floodplain Map for Long Neck area of Sussex County.



In February 1998, numerous homes and mobile homes built to the 1985 base flood elevation of +6 were flooded. Indian River Bay reached a flood height of +6.6 - +7.0 in 1998 leading many homeowners to request federal disaster assistance to lift post-FIRM buildings that were less than 20 years old.







House with proposed basement under construction just outside the floodplain - filled with groundwater.

Removal of land by filling above the base flood elevation removes NFIP floodplain management and insurance requirements.



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	SUSSEX COUNTY, DELAWARE (Unincorporated Areas)	Lot 215, Americana Bayside, Phase 4, as shown on the Plat, recorded in Book 105, Page 127; Lots 501 through 526, Americana Bayside, Phase 11, as shown on the Plat, recorded in Book 157, Page 55, All Plats Filed in the Office of the Recorder of Deeds, Sussex County, Delaware
	COMMUNITY NO.: 100029	
AFFECTED MAP PANEL	NUMBER: 10005C0655J	
	DATE: 1/6/2005	
FLOODING SOURCE: ASSAWOMAN BAY; ROY CREEK		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 38.456, -75.115 SOURCE OF LAT & LONG: ESRI: FEMA GEOCODE/GOOGLE MAPS DATUM: NAD 83

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
501	--	Americana Bayside, Phase 11	Wild Rose Circle	Property	X (shaded)	5.2 feet	--	5.3 feet

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
515A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	6.0 feet
515B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.8 feet
516A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.8 feet
516B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
517A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
517B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.5 feet
518A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.4 feet
518B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
519A	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.6 feet
519B	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.3 feet
520	—	Americana Bayside, Phase 11	Coneflower Circle	Property	X (shaded)	5.2 feet	--	5.2 feet

Or even filling it to 0.0 feet above the base flood elevation. In this community several dozen lots were completely removed, all with just a few inches of freeboard.



Lots removed by filling to a few tenths of a foot above BFE are located in the tidal floodplain of Assawoman Bay. Future rise in sea level may return the land to the floodplain with structures built exempted from floodplain regulations and potentially without flood insurance.

Thank you

Michael Powell

